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ABSTRACT

An 18-month project was conducted to create a microcomputer version of the National Center for Research in Vocational Education's Career Planning System (CPS) designed for use with mildly mentally retarded, learning disabled, and behaviorally handicapped middle school students. Separate formative and summative evaluations measured the effectiveness of the microcomputer version of CPS. During the formative evaluation, researchers administered exit interviews to 49 students completing the 10-week pilot test of CPS and asked the 7 teachers at the 5 pilot test sites to complete instructor logs. Summative data were gathered through two evaluation instruments: data regarding the impact of the CPS materials were obtained via the administration of pre- and posttests to students in experimental and control groups, and data concerning the teachers' assessments of the programs' overall quality were elicited through a five-point rating scale that was included on the instructor log. Students and teachers alike found the microcomputer version of CPS interesting, enjoyable, and usable. The pre- and posttest scores of the experiment group further attested to the effectiveness of CPS. (Copies of the evaluation instruments used are appended.) (MN)

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# CAREER PLANNING SYSTEM
# MICROCOMPUTER VERSION

## Evaluation Report

by

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and

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in Vocational Education
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February 1983

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TABLE OF CONTENTS


| | Page |
|---|---|
| LIST OF FIGURES AND TABLES | iv |
| FOREWORD | v |
| EXECUTIVE SUMMARY | vii |
| INTRODUCTION | 1 |
| DESCRIPTION OF THE INSTRUCTIONAL MATERIALS | 3 |
| The Career Planning System | 7 |
| The Student Guide | 11 |
| The Instructor Guide | 12 |
| DESCRIPTION OF THE EVALUATION EFFORT | 13 |
| Formative Evaluation | 13 |
| Summative Evaluation | 14 |
| ANALYSIS OF THE FORMATIVE DATA | 19 |
| CPS (Microcomputer) Introduction | 20 |
| Interest Sort | 21 |
| Interest Areas | 22 |
| Education Plan | 30 |
| Student Guide | 30 |
| Instructor Guide | 31 |
| Additional Comments | 31 |
| ANALYSIS OF THE SUMMATIVE DATA | 35 |
| Data Indicating Student Growth | 35 |
| Testing the Hypothesis | 40 |
| Implications of the Summative Results | 41 |
| Analysis of Teachers' Ratings | 42 |
| CONCLUSIONS AND RECOMMENDATIONS | 45 |
| Conclusions | 45 |
| Recommendations | 46 |
| REFERENCES | 49 |
| APPENDIX. EVALUATION INSTRUMENTATION | 51 |
| CPS Student Feedback Form | 53 |
| Instructor Log | 55 |

LIST OF FIGURES AND TABLES


| | | Page |
|---|---|---|
| Figure 1. | Instructor Options . . . . . | 5 |
| Figure 2. | Career Planning System Overview . . . . . | 6 |
| Figure 3. | CPS Interest Areas and Occupations . . . . | 8 |
| Figure 4. | Interest Area Flowchart . . . . . | 10 |
| Figure 5. | Overview of the Design Used for the Formative Evaluation . . . . . | 15 |
| Figure 6. | Teachers' Ratings of CPS Components . . . | 18 |
| TABLE 1. | AGGREGATED EXPERIMENTAL GROUP MEAN SCORES (N = 48) . . . . . | 37 |
| TABLE 2. | AGGREGATED CONTROL GROUP MEAN SCORES (N = 23) . . . . . | 38 |
| TABLE 3. | COMPARISON OF CHANGES MADE BY EACH GROUP . . . . . | 39 |
| TABLE 4. | MEAN RATINGS OF STUDENT MATERIALS . . . . . | 44 |
| TABLE 5. | MEAN RATINGS OF INSTRUCTOR GUIDE . . . . . | 44 |

# FOREWORD

Career planning for handicapped people has become increasingly important over the last decade because legislation, litigation, and a growing public awareness have all combined to promote the full participation of handicapped citizens in the mainstream of American life. This project, which has resulted in the production of a comprehensive microcomputer-based career planning system for mildly mentally retarded, learning disabled, and severely behaviorally handicapped middle-school students, has thus provided an important and timely tool to assist these students as they begin to explore careers and to make educational decisions that will have significant impact on their adult lives. Moreover, by providing for the delivery of career planning experiences through the latest in microcomputer technology, the project has ensured that its target students will also reap the wide range of learning benefits this technology offers.

Appreciation is expressed to all project staff members who have participated in the eighteen-month effort to design and produce these materials: to Dr. James P. Long and Dr. Leonard O. Nasman, who directed the project; to Delia Neuman, Jon Persavich, and Wheeler Richards, graduate research associates who participated in the project's instructional-design phase; to Patrick Hurley, Brent Miller, Devin Needles, Don Kreinbrink, and Dave Keen, who programmed the student materials; to Gail Merecickey, who did the project's graphic design; and to Margaret Barbee, Carolyn Goodrich, and Cathy Martin, who provided secretarial support.

Appreciation is also expressed to the teachers and other staff of the five school districts that participated in the project's field test; their cooperation was essential to ensuring the quality and validity of the final instructional materials.

Robert E. Taylor
Executive Director
The National Center for
Research in Vocational Education

## EXECUTIVE SUMMARY

The field test of the Career Planning System (CPS), Microcomputer Version, involved the collection and analysis of data reflecting the effectiveness of the materials for two purposes: (1) formative evaluation and (2) summative evaluation. This report first describes all the instructional materials that comprise the CPS, Microcomputer Version. Next it describes the project effort involved in accumulating and utilizing both formative and summative data. Finally, it analyzes both types of data, providing conclusions and recommendations.

The description of the instructional materials includes an explanation of the software, Student Guide, and Instructor Guide. Tables and Figures are also provided to enable the reader to comprehend how student, teacher, and microcomputer all interact in an effort to promote career awareness.

The description of the formative evaluation effort explains how an adaptation plan guided the original development of the system, whereas the pilot-testing process provided valuable guidance for its subsequent revision. The summative evaluation effort is described next: formation of control groups and experimental groups at each test site; experimental design; the use of pretests and posttests for students; testing of the hypothesis by means of a standard statistical analysis; and the provision for ratings by teachers.

The analysis of the formative data consititutes a major portion of this report. The data supplied by the Instructor Log from each pilot-test site was studied and categorized for every segment of the system. The suggestions for improvement and criticisms made by the instructors, as well as those made by the students and transmitted through the instructors, are all recorded for the purpose of suggesting revisions in the software and print materials. This section records how many students actually completed certain portions of the system. The results of this data provided the basis for extensive revision of the materials during the last few weeks of the project.

The analysis of the summative data provided a basis for accepting the hypothesis upon which the project was based. It had been hypothesized that interaction with the CPS, Microcomputer Version, would significantly advance target student knowledge about careers, about self with respect to careers, and about the career planning process. Student growth, measured as the difference in mean scores from pretest to posttest, was compared for the control group and the experimental group. The difference was found to be statistically significant at the .05 level. This

allows the acceptance of the hypothesis when data from all five pilot-test sites are aggregated. No other statistically significant results were discovered.

Ratings made by instructors are also compiled and summarized. The CPS, Microcomputer Version, was rated favorably by all instructors.

Five conclusions and eight recommendations were developed as a result of the project. Perhaps the most striking conclusion is that the system is usable for a wider audience than the group with which it was pilot-tested. It is recommended that a subsequent project undertake the process of developing an alternative management system as suggested by some students and teachers. A second significant recommendation is that print-based materials should not be adapted to the microcomputer, since the inevitable tendency is to make the microcomputer an electronic page turner. Other recommendations are made to assist researchers and developers who undertake future projects of a similar nature.

The report includes references, and it concludes with an appendix that provides copies of the evaluation instruments used.

# INTRODUCTION

During the fall term of the 1982-1983 academic year, five school districts in or near major metropolitan areas participated in the field test of the Career Planning System (CPS), Microcomputer Version--a comprehensive, individualized career guidance package for mildly mentally retarded, learning disabled, and behaviorally handicapped middle-school students. The package was adapted to the microcomputer from a print-based product previously found successful with such students. For the field test, seven teachers and a treatment group of forty-nine students in the participating districts used the CPS materials and provided a variety of data about them. A total of twenty-three students from the same districts served as the control group against which the progress of the students in the treatment group could be measured.

The participating districts were as follows:

- Boulder Valley Public Schools
  Boulder (Denver), Colorado
- Brentwood Public Schools
  Brentwood (St. Louis), Missouri
- Columbus Public Schools
  Columbus, Ohio
- Farmers Branch--Carrollton I.S.D.
  Carrollton (Dallas), Texas
- Freeport Public Schools
  Freeport (New York City), New York

The purpose of this evaluation report is to present a summary and analysis of the information collected during the

field test in relation to (1) the materials' effects upon the goal achievement of the treatment group and (2) the perceptions of these students and their teachers regarding the strengths and weaknesses of the materials. This report will have direct value to the U.S. Department of Education, the sponsor of the project under whose auspices the materials were developed and tested. The report should also be of interest to other researchers involved in similar research and to the five districts that participated in the field test effort. The report has also provided National Center staff members with data to guide their efforts in revising the materials to make them more useful for teachers of the learning-handicapped as well as more valuable for students.

## DESCRIPTION OF THE INSTRUCTIONAL MATERIALS

The Career Planning System (CPS), Microcomputer Version, is a comprehensive, individualized career guidance package for middle-school students who have been identified as mildly mentally retarded, learning disabled, and/or behaviorally handicapped and who read at approximately the 3.5 grade level. This version of CPS is designed to involve these students actively in planning their own career-related studies and other activities for the future. The CPS revolves around the following four major career development outcomes:

- To learn about personal interests
- To examine occupations to learn how they may relate to personal interests
- To identify interests and areas of study in which personal interests may be nurtured and in which related skills may be developed
- To relate educational preparation to possible occupational choices

The CPS, Microcomputer Version, package consists of three types of materials designed to foster the attainment of these outcomes: (1) a set of thirty computer floppy disks that contain the major management and instructional components of the System, (2) a Student Guide for each student who uses the materials, and (3) an Instructor Guide for the teacher or counselor who guides and facilitates the students' exploratory and planning activities.

The floppy disks--which were developed for use on the Atari 800 microcomputer system--console with 64K RAM of memory,

television set, and two disk drives--include three management and twenty-seven instructional disk collected in loose-leaf pockets and enclosed in a binder. The management component is a comprehensive, easily used system that allows the teacher to create a class roster, keep track of student data and progress throughout use of the CPS, alter some aspects of the CPS as necessary to serve student and class needs, and so forth. The complete menu of management functions included in this component is listed in Figure 1.

Once students sign on to the computer to use the CPS, they are routed automatically through the twenty-seven disks that comprise the System's instructional activities: Introduction, Interest Sort, Interest Areas, and Education Plan. Figure 2 displays this general sequence of student movement and lists the ten Interest Areas the students can explore through the CPS.

The Introduction material consists of activities designed primarily to familiarize the student with the CPS--its goals, structure, procedures, and vocabulary. This section includes such activities as charts, a word-search puzzle, and crossword puzzles that require the student to participate actively in the acquisition of concepts and vocabulary essential to using the CPS.

The Interest Sort presents a series of fifty statements about aspects of various CPS occupations (working outdoors, helping people with their problems, and the like). The students respond to these statements by indicating their level of interest

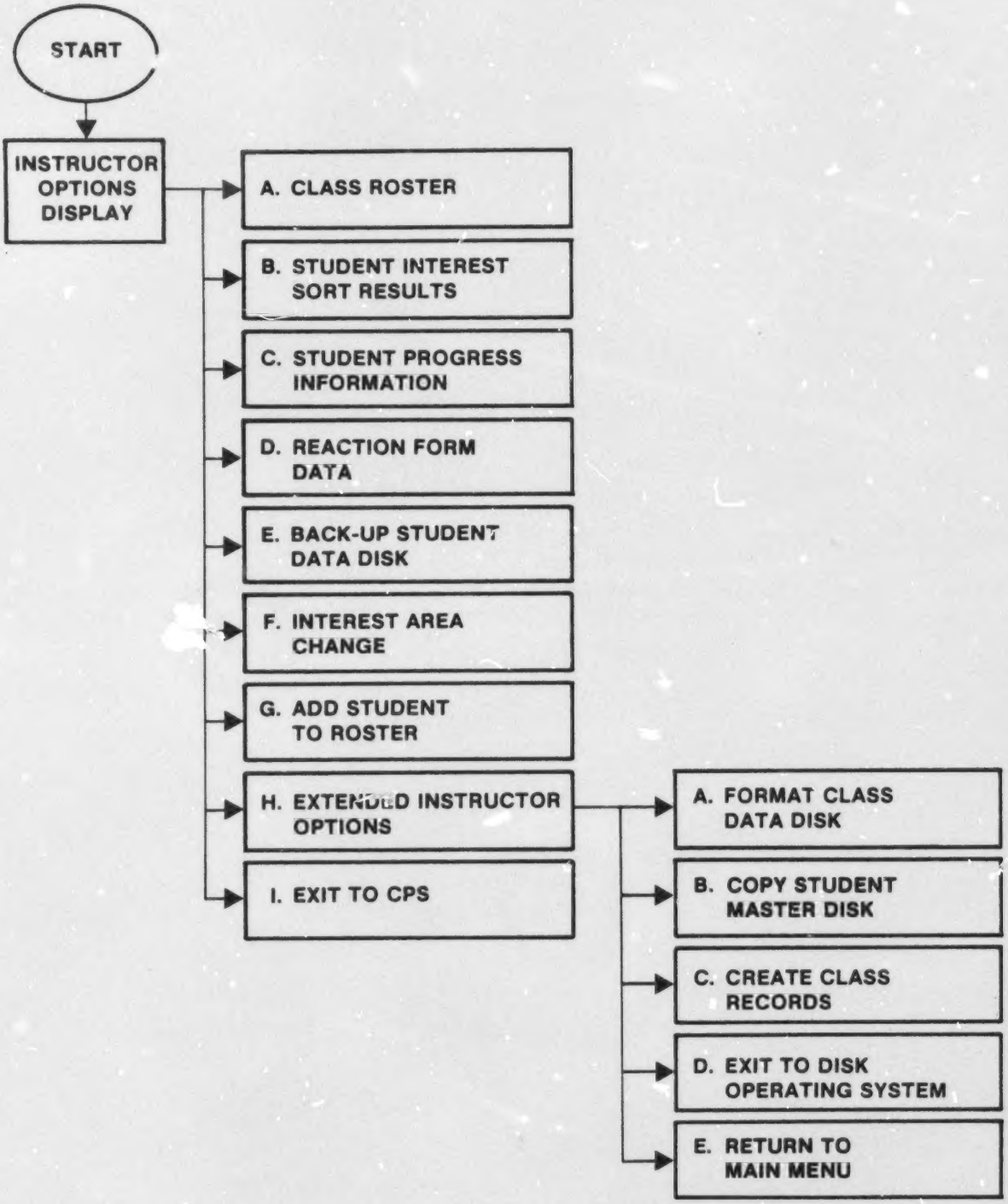
START
INSTRUCTOR OPTIONS DISPLAY
A. CLASS ROSTER
B. STUDENT INTEREST SORT RESULTS
C. STUDENT PROGRESS INFORMATION
D. REACTION FORM DATA
E. BACK-UP STUDENT DATA DISK
F. INTEREST AREA CHANGE
G. ADD STUDENT TO ROSTER
H. EXTENDED INSTRUCTOR OPTIONS
I. EXIT TO CPS
A. FORMAT CLASS DATA DISK
B. COPY STUDENT MASTER DISK
C. CREATE CLASS RECORDS
D. EXIT TO DISK OPERATING SYSTEM
E. RETURN TO MAIN MENU

Figure 1. Instructor Options

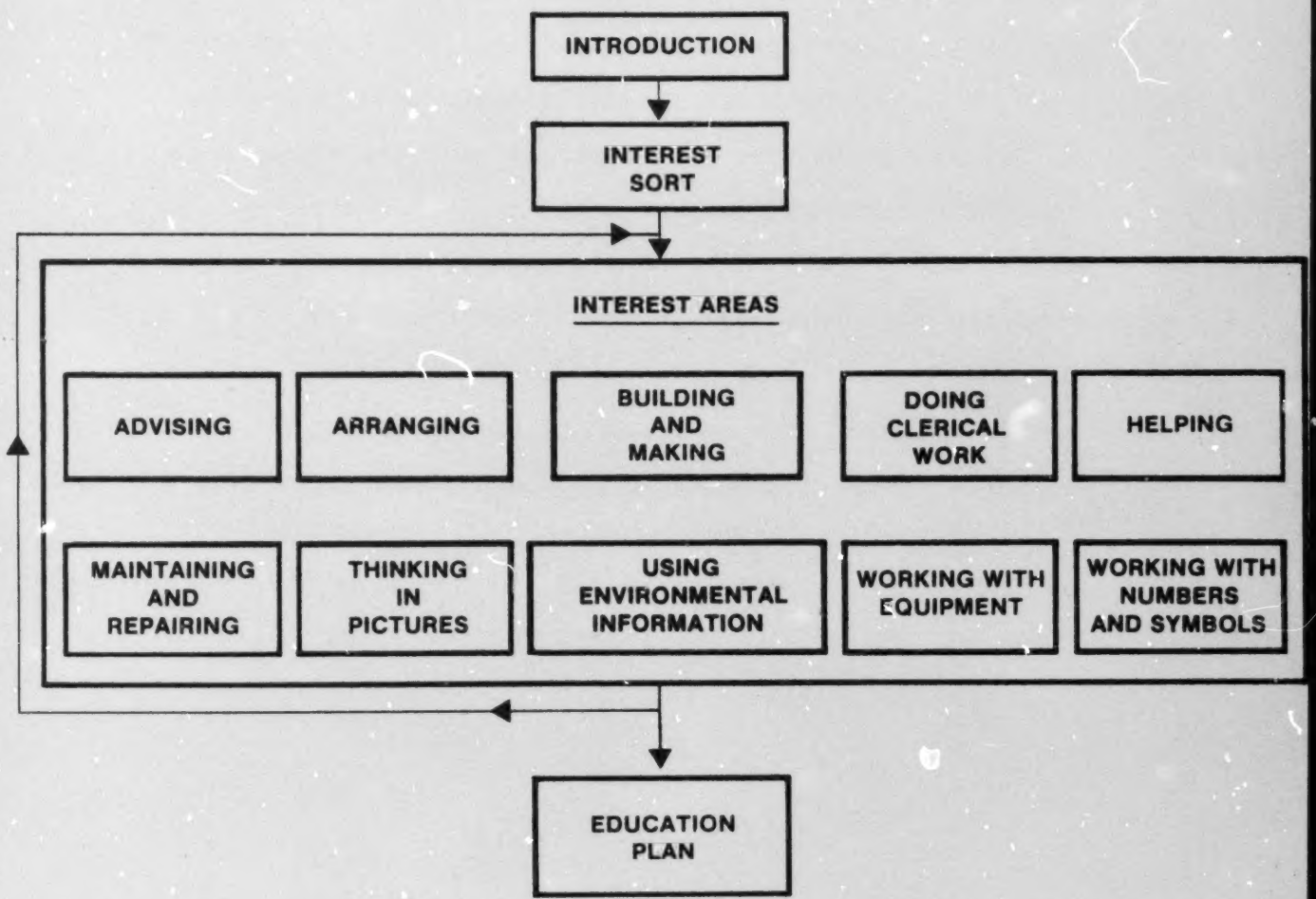


Figure 2. Career Planning System Overview

in each--like "a lot," or "a little," or "not at all." After the students have entered all these responses, the computer compiles them into a ranked listing of as many as ten Interest Areas for each students. The students' computer-directed movement through these areas in the order indicated by their own responses constitutes the core of the CPS individualized career-planning experience.

## The Career Planning System

The Interest Areas themselves form the main body (twenty-six disks) of the Career Planning System, as well as its conceptual core. These Interest Areas highlight interests that middle-school students may have or may wish to explore, rather than focus on traditional occupational clustering systems. The ten CPS Interest Areas are designed to help students acquire immediate self-knowledge rather than to speculate about the future. The occupations included within the Interest Areas were also chosen to represent rather than exhaust the world of work. They cover a wide range of job tasks requiring visual, verbal, and computational skills, and encompass an educational continuum from high school diploma to advanced degree, as well as a range of skills from entry-level to professional. Figure 3 indicates the scope and organization of this central component of the Career Planning System, Microcomputer Version.

**1. Advising**

- Child care attendant
- Employment counselor
- Lawyer
- Travel agent

**2. Arranging**

- Architect
- Florist
- Hair stylist
- Interior designer

**3. Building and Making**

- Carpenter
- Drafter
- Painter
- Roofer

**4. Doing Clerical Work**

- Cashier
- File clerk
- Secretary
- Stock clerk

**5. Helping**

- Licensed practical nurse
- Police officer
- Properties manager
- Waiter

**6. Maintaining and Repairing**

- Appliance repairer
- Mechanic
- Plumber
- Sanitation worker

**7. Thinking in Pictures**

- Cartoonist
- Commercial artist
- Display artist
- Photographer

**8. Using Environmental Information**

- Farmer
- Fish and game warden
- Landscape gardener
- Meteorologist

**9. Working with Equipment**

- Computer service technician
- Cook
- Machinist
- Telephone operator

**10. Working with Numbers and Symbols**

- Library assistant
- Market research coder
- Medical laboratory assistant
- Teller

Figure 3. CPS Interest Areas and Occupations

Figure 4 describes the sequence of student movement through each Interest Area. First, the students encounter a Probe--a brief introduction to various aspects of the Interest Area--and meet four representative workers from the Area whose jobs the students can elect to explore. The students can then choose to complete one of four interactive Activities designed to simulate the job tasks of these workers and to give the students a "feel" for the actual procedures of the jobs. If this Activity excites the students' interest in the occupation, they can choose to proceed to a menu-driven Brief, through which they "interview" the worker by asking several specific questions about information that is important to consider when making career choices (e.g., additional job tasks, work environment, educational preparation, salary range, and so forth).

After exploring as many Activities and Briefs in the Interest Area as the students desire--and, in the process, completing a simple Reaction Form describing their feelings about each--the students talk briefly with the instructor before moving on through the automatic routing supplied by the CPS management system to the next Interest Area on their individualized lists. This talk is termed an "Exit Interview"; one occurs at each conclusion of a student's exploration of an interest area.

When the students have explored all the Activities and Briefs of interest in their identified Interest Areas, the final CPS component (the Education Plan) is encountered. First, the

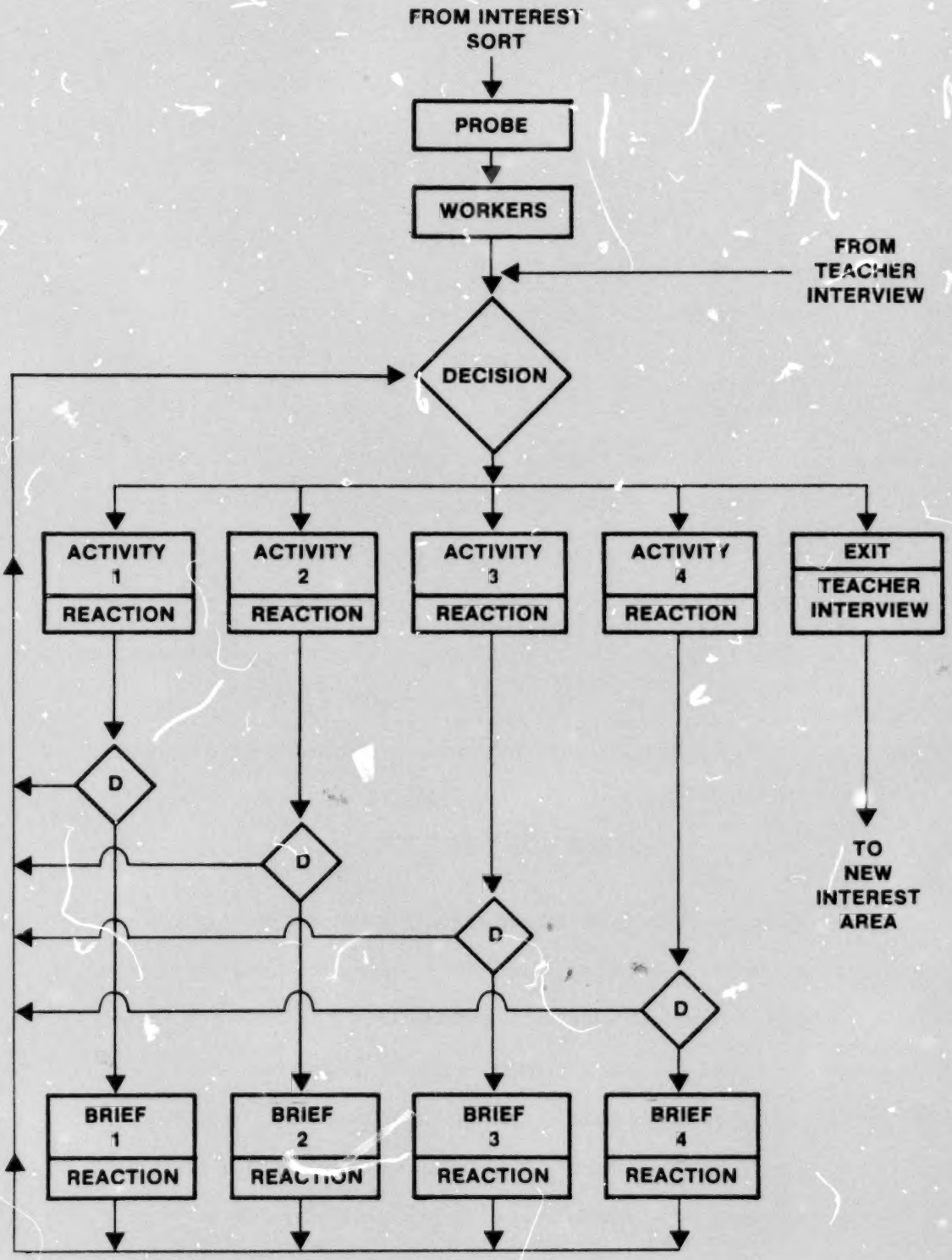


Figure 4. Interest Area Flowchart

students are reminded that the computer will use their responses on the Reaction Forms to compile a list of all the jobs (up to a maximum of ten) in which each student indicated a high level of interest. The students copy these lists into their Student Guide and take this information to the teacher or counselor. The teacher or counselor works with them to synthesize the information gained through the exploratory experience, to plan some additional activities, and to select some basic courses that will help the students examine possible occupations in greater depth.

## The Student Guide

The Student Guide, which provides a permanent record of the students' final lists of occupations of interest, serves a variety of purposes earlier in the students' use of the CPS, as well. The only hard copy the students retain throughout the program, the Guide (1) introduces them to the CPS and to the procedures for loading a disk; (2) provides work sheets for practice and reinforcement for the concepts and vocabulary presented in the computerized Introduction; (3) includes a glossary of words (e.g., wage, salary, college, apprenticeship) that students encounter in the CPS Briefs; (4) provides a central record of the students' CPS experiences, reactions, and developing interests; (5) offers an opportunity for the students to expand upon the reactions entered in summary form through the computerized Reaction Forms; and (6) includes a section into which the students can copy the courses and activities to pursue in order

to enter occupations of interest. To conclude their CPS experiences, the students take the Guide to the teacher or counselor and work together to use the recorded information, filling out the final section of the Guide--the Education Plan.

## The Instructor Guide

The third kind of material included in the CPS package is the Instructor Guide, which provides the theoretical, technical, and instructional information a teacher or counselor needs to implement the CPS. The various sections of this Guide provide a basic awareness of the goals, purposes, conceptual bases, and developmental history of the CPS. They include (1) an understanding of the usefulness to handicapped students of career planning in general and of the CPS, Microcomputer Version, in particular; (2) a description of the content, organization, and sequence of student activities of the CPS; (3) a detailed explanation of the procedures for using the management component of the CPS and for guiding students through the instructional component; (4) suggestions for group activities to supplement and expand upon the individualized core activities of the CPS; and (5) sources of additional information about careers for the instructor and student who wish to pursue various topics in more detail. The Instructor Guide is thus the vehicle that integrates all the various aspects of the Career Planning System, Microcomputer Version, into a coherent, easily implemented, and thoroughly documented instructional package.

## DESCRIPTION OF THE EVALUATION EFFORT

The evaluation of the Career Planning System, Microcomputer Version, involved both formative and summative aspects. The formative aspect was initiated simultaneously with the materials adaptation phase of the project and continued through the field test phase. The summative aspect ran concurrently with the field test of the adapted materials (September - November 1982). Each phase, along with each instrument used in the formal data collection effort, is described next. (A copy of the instruments themselves are included as the appendix to this report.)

### Formative Evaluation

Development procedures as well as standards of quality for both the computerized and the print-based CPS materials were set out in the Adaptation Plan, a document prepared early in the project and reviewed for appropriateness by a member of the faculty for exceptional children of The Ohio State University. Throughout the development phase, project staff conducted periodic reviews of the materials to ensure their conformity with the specifications delineated in this Plan.

Several kinds of formative efforts were conducted during the field test phase of the project. At the National Center, project staff reviewed all the computerized and printed materials for instructional and technical quality and corrected all the errors, omissions, and so forth that were found. Staff also made regular, biweekly telephone calls to each field test teacher to gain

information about effective and ineffective aspects of the CPS as they were discovered. At the conclusion of the field test effort, staff made site visits to two schools to discuss the experience with various school personnel. These conversations provided National Center staff with the opportunity to probe into and compile extensive notes on the participating teachers' perceptions of the CPS.

At each of the five field test sites, participating teachers and students also provided information throughout the testing effort in order to guide the revision of the CPS. Teachers used an Instructor Log bound into the "Evaluating the CPS" section of the Instructor Guide to provide comments on the strengths and weaknesses of the package and to offer suggestions for improvement. Teachers also completed Exit Interview Forms with students as they completed Interest Areas in order to glean the students' reactions to the Interest Areas and to form and record their own opinions of the success of the Interest Areas in imparting career knowledge and self-awareness to the students.

## Summative Evaluation

The primary aspect of the summative evaluation effort involved a classical experimental design employed to test whether students in the treatment group did, in fact, gain more knowledge about themselves, about careers, and about the process of career planning than did their counterparts in the control group. Figure 5 displays the general framework for this aspect of the summative effort.

| | Experimental Group[1] | Control Group[1] |
|---|---|---|
| LOCATION | All 5 test sites[2] | All 5 test sites[2] |
| SAMPLE | 49 students[3] | 23 students[4] |
| PRETEST | Categories: A, B, C | Categories: A, B, C |
| INTERVENTION | Microcomputer Version of CPS for ten weeks | None |
| POSTTEST | Categories: A, B, C, D | Categories: A, B, C |

---

CATEGORIES: A--Measures of knowledge about careers

B--Measures of knowledge about career planning in general

C--Measures of knowledge about self with respect to careers and career planning

D--Brief questionnaire designed to obtain students' reactions to the CPS experience

[1]Students were randomly assigned to each group at each test site.

[2]Boulder (Denver), Colorado; Brentwood (St. Louis), Missouri; Carrollton (Dallas), Texas; Columbus, Ohio; and Freeport (New York City), New York.

[3]Students out of the orginally selected 50 (10 at each site) for whom complete data were returned.

[4]Students out of the originally selected 25 (5 at each site) for whom complete data were returned.

Figure 5. Overview of the Design Used for the Formative Evaluation

The design was a classical experimental one inasmuch as the two groups were formed through random assignment, so that two groups at each site could be considered comparable before the experiment began. During the course of the experiment, the experiences of the two groups were identical, with the single exception of the intervention of the CPS, Microcomputer Version, in the activities of the experimental group. The scores of the experimental group provided a posttreatment status indicator, whereas the scores of the control group provided a point of comparison with the achievement of the experimental group students. The data from each of the five test sites were analyzed separately and in combination with data from the other four sites to provide a variety of measures of statistical significance.

The pretest, which was identical for both groups, contained thirteen questions (see the appendix) designed to obtain measures of each student's perceptions of the three types of knowledge indicated in figure 5, which are as follows:

- Category A--Knowledge about careers (questions 1, 7, 12)
- Category B--Knowledge about career planning (questions 8, 9, 10, 13)
- Category C--Knowledge about self with respect to careers and career planning (questions 2, 3, 4, 5, 6, 11)

The posttest for both groups contained the identical thirteen questions contained on the pretest, plus (in the case of the experimental group) ten additional questions designed to

obtain these students' reactions to the CPS, Microcomputer Version. These latter questions, which constitute category D of figure 5, are not considered to be part of the summative evaluation but were included to provide additional formative data.

Responses on the pretests and posttests were coded at the partially ordered level of measurement (Coombs 1953) as follows:

1. Questions 1, 2, 3, 4, and 5 were coded--
   a) Nothing at all = the real number 1
   b) Very little = the real number 2
   c) I can't say = the real number 3
   d) Some = the real number 4
   e) A lot = the real number 5
2. Questions 7, 8, 10, 11, and 12 were coded--
   a) Agree = the real number 1
   b) Disagree = the real number 3
   c) I can't say = the real number 2
3. Questions 6, 9, and 13 were coded--
   a) Agree = the real number 3
   b) Disagree = the real number 1
   c) I can't say = the real number 2

The assignment of real numbers in this manner made the "better" student response correspond to the higher numbers. As noted in Abelson and Tukey (1970) and in Labovitz (1970), the assignment of numeric values to the categories in such a partially ordered level of measurement allows the use of the properties of

the real-number system in summarizing and analyzing measurements. As described in the next section of this report, the Wilcoxon Matched-Pairs Sign Test was used as a statistical technique for analyzing the coded data in order to determine the effectiveness of the CPS, Microcomputer Version.

Additional summative data were obtained through the rating section of the Instructor Log. On this instrument, teachers were asked to rate eight aspects of each instructional component of the CPS on a five-point scale similar to a Likert scale. They were also asked to use a similar scale to rate each section of the Instructor Guide according to its clarity, utility, and overall quality. Figure 6 displays both the items that were rated and the scale the teachers applied to express their ratings. Mean ratings were calculated in order to derive measures of teachers' opinions of the quality of the Career Planning System, Microcomputer Version.

| ITEMS RATED | RATING SCALE |
|---|---|
| Conceptual level | 5 = Very good, excellent |
| Reading level | 4 = Good, more than acceptable |
| Maturity level | 3 = Average, acceptable |
| Level of difficulty | 2 = Poor, minimally acceptable |
| Motivational appeal | 1 = Very Poor, unacceptable |
| Level of active student involvement | |
| Clarity | |
| Overall quality | |

Figure 6. Teachers' Ratings of CPS Components

## ANALYSIS OF THE FORMATIVE DATA

As indicated in the previous section, several strategies were used to gather formative data about the impact of the Career Planning System, Microcomputer Version, upon the students who participated in its field test. Students typically spent an average of one hour per week interacting with the microcomputer during the ten weeks of the pilot-testing process. Students' perceptions of their experiences with the package were garnered through Exit Interview Forms, while teachers' perceptions of the quality and utility of the materials were gained through Instructor Logs, biweekly telephone conversations, and site visits. The results obtained using these strategies--particularly by the data returned to the National Center on 182 Exit Interview (Reaction) Forms and seven Instructor Logs--are described and discussed below.

The Instructor Log included in the Instructor Guide (see the appendix) provided the most efficient and effective vehicle for organizing all the formative data into a thorough and logical discussion of the strengths and weaknesses of the CPS, Microcomputer Version. The Instructor Log was divided into sixteen sections that parallel the fifteen major instructional components of the package (Introduction, Interest Sort, each of the ten Interest Areas, Education Plan, Student Guide, and Instructor Guide) and included a section for additional comments, as well. The Log was designed to encourage summary comments that would

identify the major strengths and weaknesses of the package and point the way to the most effective revisions. Extensive revisions of the entire package were made by project staff, based on the suggestions made by instructors and students in the formative evaluation process. The remainder of this section integrates all the relevant formative comments into the framework provided by the Instructor Log. What follows provided a framework for revision of the total system.

## CPS (Microcomputer) Introduction

According to comments received from all the field test sites, the CPS (Microcomputer) Introduction appears to be (before revision) one of the weakest parts of the CPS package. In general, although some students found this segment motivating, most seemed to find it too lengthy and/or too slow moving. Whereas the teachers felt the instructions were generally clear and the reading level allowed most students to work with complete independence, the segment required too much reading and offered too few opportunities for active participation.

Recognizing the need for students to acquire the information contained in the Introduction, the teachers offered several suggestions for imparting that information in more effective ways. These suggestions included (1) shortening the time loop in the early displays before the student takes control of the program's pace; (2) replacing such vocabulary terms as "Probe" and "Brief" with simpler words; (3) eliminating some of the repetition provided

both on the computer and in the Student Guide activities designed to reinforce student learning; (4) allowing the students to choose among activities rather than moving linearly through the entire program; (5) reducing the amount of detail; and--as suggested by several teachers--(6) using more sound and graphics. Several teachers commented that the students enjoyed the word-search and crossword puzzles and suggested that more activities of this type would greatly improve this segment.

## Interest Sort

Teachers generally reported this segment to be clear, concise, and written at a level that allowed students to work with almost total independence. One teacher reported that the students were very interested in this segment and that the questions encouraged them to think about their likes and dislikes, whereas another teacher felt that the students actually gave little thought to their answers. Several teachers raised the issue of whether the questions do, in fact, identify particular Interest Areas, since many of the students identified as many as eight or nine Interest Areas. Because the questions were, in fact, designed to expand students' awareness of possible interests rather than restrict their exploration to only a few, several teachers felt it infeasible (especially in light of the time restrictions imposed by the field test deadline) to have students work on more than two or three Interest Areas in all.

## Interest Areas

During the field test, students as well as teachers provided data on this core segment of the CPS, Microcomputer Version. Since exploration in each Interest Area--unlike movement through the Introduction and Interest Sort--was selective rather than universal, data reported in relation to each Interest Area were based on a narrower set of experiences than the data reported previously. These data, as well as the number of students and field test sites that provided data for each Interest Area, are reported in the discussions that follow.

### Advising (Sixteen Students at Four Sites)

Students seemed generally to like these Activities and to feel they were neither too easy nor too difficult. Students reported a variety of specific likes (e.g., working with children, figuring amounts, meeting people) and dislikes (e.g., low salary, sitting behind a desk, getting up early to go to work) about occupations presented in the Area. They seemed most attracted to the occupation of child care attendant and least interested in that of employment counselor. The teachers, too, seemed to like the child care attendant Activity best. Several teachers questioned the appropriateness of the lawyer occupation for this group of students and noted that the amount of reading this Activity required presents some difficulty. Overall, the teachers felt that nine of the sixteen students acquired reasonable amounts of career knowledge and self-awareness from working in this Interest Area, while the other seven students did not.

Arranging (Twenty-two Students at Five Sites)

Students' comments reflect this range of interest in Arranging, some calling the Activities boring and "no fun" and others expressing delight in working with their hands and seeing how things looked in the different Activities.

Interior designer was the occupation most favored by the students, although each of the other three occupations in this Area was considered the favorite by at least two students. Teachers found the Interest Areas simple and easy to understand and repeatedly cited the graphics in the florist Activity as attractive and motivating. Teachers expressed a concern about whether architect is a realistic occupation for their students and felt the students gained more career knowledge than self-awareness from the Interest Area, because many of the students are unable to think abstractly and to relate occupational information to themselves.

Building and Making (Thirty-eight Students at Five Sites)

This was the most popular Interest Area during the field test, attracting the greatest number of students. Most indicated that they liked learning about materials, building things, and working with their hands and with tools. Four students said what they liked best about the Interest Area was meeting the workers and learning what they do--an indication, it would seem, that students relate well to the CPS, Microcomputer Version, strategy of using cartoon "workers" to convey occupational information to students in a personal way.

Students' ability to identify with the workers is indicated by several other comments as well. One student indicated that what she liked least about the Interest Area was "being up so high"--a concern expressed by the imaginary roofer--whereas another student cited the danger of hitting herself with a hammer--another of the roofer's concerns. Several girls noted that jobs in this Interest Area involve heavy work and concluded that this Area is only "for men." Four students mentioned some aspect of reading as what they liked least about the Interest Area, while six others gave this designation to math.

Comments on five Instructor Logs as well as in various telephone conversations suggest that the computation required in this Interest Area (e.g., figuring the areas of surfaces, the amounts of materials required, and so forth) is excessive and beyond the ability levels of the students. Indeed, almost all the teachers' comments on this Interest Area centered on the difficulty and "passivity" of the math exercises, although several teachers wrote that the choice of occupations in the Area is well suited to their students' interests and abilities. Teachers were also generally positive in their assessments of the amounts of career knowledge and self-awareness students gained from their work in the Area, noting that twenty-two students (out of the thirty-eight for whom responses were given) gained a reasonable amount of career knowledge, and nineteen acquired a reasonable amount of self-awareness through their participation in the "Building and Making" Activities and Briefs.

Doing Clerical Work (Twenty-two Students at Five Sites)

Students liked working with money and a "cash register," giving change, typing, and dealing with and helping people. One student liked physical work best, whereas another liked lifting least. Two students indicated that stacking stock items in their bins was too easy, and one concluded that he would not like working alone and indoors in this job.

Teachers' comments reflect the middle-of-the-road reception this Interest Area seemed to get from the students. Two Instructor Logs, for example, contained no comments at all, whereas one stated only that the one student who had tried the Area had enjoyed doing the Activities. Other teacher comments suggested that some of the Activities, although they seemed to interest the students, were perhaps too long or not active enough. The teachers generally thought the selection of occupations in this Area is good but suggested that only about half of the students who selected the Area gained reasonable amounts of career knowledge and self-awareness from it.

Helping (Nineteen Students at Five Sites)

Students consistently expressed a strong interest in helping people as their reason for enjoying these Activities and Briefs. Police officer--the most popular occupation--was mentioned by eight students as an Activity they particularly enjoyed. Even though students' comments about what they liked least (i.e., the risk of shooting someone or being shot) indicate an awareness of

the dangers of this occupation, this awareness seemed not to diminish interest in it.

Teachers' reactions to the Area ranged from one comment saying that overall it is quite good, to two comments suggesting it is rather weak. Teachers singled out the licensed practical nurse Activity as being excellent and especially realistic but felt the properties manager was not as well accepted, because this occupation and the theatrical world it represents are beyond the experiential and maturity levels of the students. Teachers felt that more than half of their students gained reasonable amounts of career knowledge and self-awareness through the Interest Area. Teachers' negative responses to questions about these issues focused (as they did throughout) on problems of individual students' immaturity, low ability levels, failure to take career planning seriously, and so forth, rather than in terms of deficiencies in the CPS materials.

Maintaining and Repairing (Sixteen Students at Five Sites)

Student comments indicate that the auto mechanic Activity was by far the most popular choice, although the remarks seem to reflect previous interest in and familiarity with this occupation rather than any particular appeal of the CPS presentation of it.

Teachers at three sites indicated that the Interest Area was done very well and that it presented a set of occupations to which their male students could easily relate. Staff at a

fourth site called for a better selection of occupations and activities (in particular, the elimination of the sanitation worker Activity and the replacement of the auto machanic's form-completion activity with something similar to the "trouble-shooting" activity of the appliance repairer). Staff at the remaining site indicated that the reading was difficult for the students, but praised the form-completion activity because it draws on retrieval, a skill that students can master. All teachers seemed to feel that only half of their students gained reasonable amounts of career knowledge and self-awareness through this Interest Area.

Thinking in Pictures (Fourteen Students at Five Sites)

Students mentioned photographer and cartoonist as their favorite Activities and named drawing, selecting subjects, and using the joystick as their favorite tasks. Teachers, too, commented on their students' enjoyment of and facility with joysticks and suggested incorporating more joystick-based Activities into the CPS, Microcomputer Version, package.

One teacher was particularly positive about this Interest Area, pointing out that it is enjoyable, very visual, filled with active involvement, and successful in giving students insights into jobs they had never considered before. Another teacher questioned the inclusion of the Area at all and suggested that it does not give a realistic view of what jobs in this field involve. On the whole, the teachers felt that their students

gained reasonable amounts of career knowledge (ten positive responses and one negative) and self-awareness (eight positive responses and three negative) from working here.

Using Environmental Information (Ten Students at Four Sites)

Students' comments highlighted the fun of using the joystick and the fact that so much new information was included here, and cited reading the stories and asking the questions (both factors, presumably, in relation to the Briefs) as the least-liked aspects.

Teachers, too, commented once again on the value of the joystick and the appeal of such visually based activities as that of the landscape gardener. One teacher commented that the students' inability to identify with the job roles introduced in this Area kept the students from exploring it fully. Indeed, the Interest Area fared poorly in the teachers' ratings of the career knowledge (five positive responses and two negative) and self-awareness (three positive responses and four negative) it imparted.

Working with Equipment (Sixteen Students at Five Sites)

Most students who worked here mentioned cook and computer service technician as their favorite occupations within the Interest Area. Some students felt the Activities were too easy, whereas others complained that the Area involved too much reading. Several teachers cited the computer service technician Activity as being especially good and well received, whereas one teacher

found it far too complicated. Staff at three sites mentioned that the cook Activity needs to be more active and creative. Teachers felt the Area did only a fair job of helping students gain career knowledge and self-awareness.

Working with Numbers and Symbols (Nine Students at Two Sites)

This was the least popular among the CPS Interest Areas. Perhaps the small number of students who worked here can be explained in part by the position of its title, the last (alphabetically) among the areas. For this reason "Working with Numbers and Symbols" would automatically be presented by the computer as the last among all the areas rated equally by any student. Explained differently, even though a student's responses on the Interest Sort may indicate this as one of five or six Areas of an equally high rank, it would be the last Area with that rank that the student would explore. Since the field test concluded before all the students could work in all their identified Interest Areas, it is possible to assume that a number of students who would have liked to work in this Area simply never got to it. It is also possible to assume that many students in the target population have little interest in working with numbers and symbols.

Several students noted that they best liked the Activities that were like working puzzles and that offered a lot to figure out. Two students cited teller as their favorite Activity, one student found the market research coder Activity too easy, and

another student mentioned that the Interest Area involves too much reading. Teachers also found the teller Activity to be effective and to offer both positive and negative appraisals of the market research coder and laboratory assistant Activities. Overall, teachers felt the Interest Area was effective in imparting career knowledge and somewhat less so in encouraging self-awareness.

## Education Plan

The Education Plan, which is the last major part of the instructional package of the Career Planning System, Microcomputer Version, was actually used by very few students. Staff at only one site provided comments to any extent, and these relate more to the corresponding section of the Student Guide than to the computerized material. Essentially, these comments offer suggestions for (1) providing more specific career preparation information through the Briefs (rather than providing it through the teacher-student conferences that are an integral part of the CPS) and (2) including a separate disk listing the education and training requirements for the various CPS occupations.

## Student Guide

Although one of the teachers mentioned that this component of the CPS, Microcomputer Version, package was very well done and several teachers commented about its specific strengths, the teachers found several facets of the product that call for

improvement. Four teachers, for example, questioned the inclusion of the Reaction Forms in the Guide. Two teachers noted that the students do not have the verbal skills to make effective use of the forms. One teacher thought the questions should be more specific. Another found the questions so broad and repetitive that they encouraged the students to respond superficially in order to lessen the amount of writing they had to do. Staff at one site suggested putting all the Guide vocabulary (i.e., the "Work Words" and "Education Words") on the computer and eliminating the pages designed to reinforce student understanding of the goals and organization of the CPS package.

### Instructor Guide

Staff at four of the sites found this Guide good or excellent, but staff at one site found the instructions too wordy and suggested summarizing each section in outline form. These teachers also suggested including a list of Interest Areas, with their corresponding disk numbers, in the Guide.

### Additional Comments

This final section of the Instructor Log was designed to give participating teachers an opportunity to summarize their reactions to their experience with the CPS, Microcomputer Version, and to offer any further suggestions for revision they felt warranted. This evaluation report integrates the teachers' general comments gleaned from the Logs as well as from the other data collection strategies described elsewhere in this report.

In general, the teachers felt that the instructional package embodies a good approach to the concepts of career planning, makes use of a delivery system that is intrinsically attractive to students in the target population, and is capable of engendering among this group the growth (to some degree) in career knowledge and self-awareness that is the package's primary goal. Teachers also pointed out some problems, however, some of which are inherent in the participating students and some of which can be traced to the package itself.

Teachers at several sites commented on their exceptional students' relative immaturity and suggested that the CPS materials may be better suited either to older, learning-handicapped students or to nonhandicapped persons of all ages. The field test students had difficulty in understanding the information in the Introduction, in engaging in the introspective and future-directed thought necessary for career planning, and in verbalizing the reactions on which their plans for the future would be made. Although they enjoyed and were able to complete the individual Activities in the package, they often seemed unable to generalize beyond those discrete experiences to achieve a significantly greater amount of skill in career planning and decision making.

Several general aspects of the CPS, Microcomputer Version, itself were seen as contributing negatively to the students' experiences. Teachers commented repeatedly that the materials

are too wordy, the reading level too high, and the activities too involved. Teachers strongly suggested that the CPS should include more games and simulations, more visual stimuli, and more use of the joystick. Teachers also called for less reading, less question answering, and less math.

Several very important comments made by instructors during the site visits or during the biweekly telephone calls from project staff were not recorded on the Instructor Logs. Some were concerned with the necessity of using the joystick and keyboard simultaneously; others felt that the use of computer graphics (although effective) leaves much to be desired when compared to the quality of a television picture such as might be delivered through the use of a videodisc player. Some teachers favored a less structured management system. Many felt there was too much reading; some asked for a printer to record Interest Sort results. All teachers held the opinion that CPS, Microcomputer Version, would be a valuable tool for career planning preparation for a wide range of persons and ages. They suggested that the system not be limited to special education, middle school children. They encouraged project staff to disseminate the system widely.

In summary, the teachers reported that the students enjoyed working with the Career Planning System, Microcomputer Version, as well as working on the computer itself, and that some students seemed to gain significantly from the experience. Overall, however, the teachers saw the need for a number of revisions before the package can be truly useful for most of the students for whom it was designed.

## ANALYSIS OF THE SUMMATIVE DATA

As explained in the section, "Description of the Evaluation Effort," summative data about the impact of the Career Planning System, Microcomputer Version, upon the field test participants were gathered through two evaluation instruments. Data regarding the effectiveness of the materials upon student growth were obtained through the administration of pretests and posttests to the experimental-group and control-group students. Data regarding the teachers' assessments of the overall quality and utility of the CPS, Microcomputer Version, were elicited through a five-point rating scale (similar to a Likert scale) that was included on the Instructor Log. This section of the report presents and discusses the information obtained through the analysis of both kinds of data.

### Data Indicating Student Growth

The expected impact of this project was that, as a result of their interaction with the microcomputer version of CPS, students in the experimental groups would gain more knowledge (about careers, about self with respect to careers and career planning, and about career planning in general) than would students in the control groups.

In order to test this hypothesis in a global fashion, the experimental groups at all five pilot test sites were aggregated to form one large experimental group (n = 48). Similarly, the

five control groups were aggregated to form one large control group (n = 23). Next, for each of the aggregated groups calculations were made of the mean scores on each of the thirteen common questions contained in the pretest and the posttest. From these mean scores, calculations were made of the mean changes made by each group for each question. These results are shown in table 1 for the aggregated experimental group and in table 2 for the aggregated group control group. Finally, table 3 displays a comparison of the changes between the pretest scores and the posttest scores made by each group for each question.

To analyze these changes statistically, the use of a nonparametric or distribution-free statistical approach was necessary, since no assumptions could be made about the sample distributions of either the aggregate experimental group or the aggregate control group. The statistical approach selected was the Wilcoxon Matched-Pairs Sign Test (Downie and Heath, 1965). The chief advantage of this application is its avoidance of all violations of parametric assumptions when sample sizes are less than or equal to ten. The experimental design selected at the start of the project called for no sample sizes greater than ten. Despite random selection of subjects, such small samples (at each pilot-test site) made it unwise to assume a parametric distribution of any type.

TABLE 1

AGGREGATED EXPERIMENTAL GROUP MEAN SCORES (n=48)

| Question | Mean Pretest Score | Mean Posttest Score | Mean Change |
|---|---|---|---|
| 1 | 3.292 | 3.875 | +0.583 |
| 2 | 3.500 | 3.938 | +0.438 |
| 3 | 3.771 | 4.021 | +0.250 |
| 4 | 3.771 | 4.125 | +0.354 |
| 5 | 3.500 | 4.000 | +0.500 |
| 6 | 2.854 | 2.813 | -0.041 |
| 7 | 2.167 | 2.146 | -0.021 |
| 8 | 2.042 | 2.208 | +0.166 |
| 9 | 2.833 | 2.708 | -0.125 |
| 10 | 2.396 | 2.458 | +0.062 |
| 11 | 1.938 | 2.063 | +0.125 |
| 12 | 2.063 | 2.292 | +0.229 |
| 13 | 2.729 | 2.854 | +0.125 |

TABLE 2

AGGREGATED CONTROL GROUP MEAN SCORES (n=23)

| Question | Mean Pretest Score | Mean Posttest Score | Mean Change |
|---|---|---|---|
| 1 | 2.652 | 3.348 | +0.696 |
| 2 | 3.652 | 3.087 | -0.565 |
| 3 | 3.913 | 4.043 | +0.130 |
| 4 | 3.478 | 4.000 | +0.520 |
| 5 | 3.304 | 3.913 | +0.609 |
| 6 | 2.913 | 2.739 | -0.174 |
| 7 | 2.532 | 2.348 | -0.174 |
| 8 | 2.478 | 2.304 | -0.174 |
| 9 | 2.870 | 2.652 | -0.218 |
| 10 | 2.522 | 2.391 | -0.131 |
| 11 | 1.957 | 1.913 | -0.044 |
| 12 | 1.783 | 2.000 | +0.217 |
| 13 | 2.652 | 2.696 | +0.044 |

TABLE 3

COMPARISON OF CHANGES MADE BY EACH GROUP

| (1) Question | (2) Change in Aggregated Experimental Group (n=48) | (3) Change in Aggregated Control Group (n=23) | (2-3) Difference in Changes |
|---|---|---|---|
| 1 | +0.583 | +0.696 | -0.113 |
| 2 | +0.438 | -0.565 | +1.003 |
| 3 | +0.250 | +0.130 | +0.120 |
| 4 | +0.354 | +0.520 | -0.166 |
| 5 | +0.500 | +0.609 | -0.109 |
| 6 | -0.041 | -0.174 | +0.133 |
| 7 | -0.021 | -0.174 | +0.153 |
| 8 | +0.166 | -0.174 | +0.340 |
| 9 | -0.125 | -0.218 | +0.093 |
| 10 | +0.062 | -0.131 | +0.193 |
| 11 | +0.125 | -0.044 | +0.169 |
| 12 | +0.229 | +0.217 | +0.012 |
| 13 | +0.125 | +0.044 | +0.081 |

## Testing the Hypothesis

The null hypothesis (that there is no difference in the changes made by the aggregated experimental group and by the aggregated control group) is stated in terms of the number of signs (positive or negative) in the last column of table 3. The null hypothesis tested is that the median change is zero. This hypothesis is rejected if there are too few plus signs (one-tailed test). The test of significance used is the binomial distribution.

For the binomial calculation, n=13 (the number of questions) and p=0.5 (the hypothesis that both groups are still from the same population despite the project intervention). In table 3 ten pluses and three minuses are noted. By chance there could be six or seven of each expected. The question is, does this frequency of ten pluses differ significantly from what would be expected by chance? A table of binomial probabilities for n=13, p=0.5 yields the following:

.000122 + .001586 + .009516 + .034892 = .046116

Thus the probability of obtaining ten or more plus signs is 0.046116, or less than 5 percent. This enables the null hypothesis to be rejected at the .05 level.

The conclusion is that the two groups are not from the identical population following project intervention. It can therefore be stated that, as a result of their intervention with the microcomputer version of CPS, students in the aggregated

experimental group gained more knowledge about careers, about self with respect to careers and career planning, and about career planning in general, than did students in the aggregated control group. This difference is significant at the .05 level. A one-tailed test was used because the hypothesis stated that a greater gain would be made by the experimental groups.

## Implications of the Summative Results

Significance at the .05 level on a one-tailed binomial test is not an especially strong result. It should be noted, however, that the pilot-testing procedures employed were designed to simultaneously accomplish four needs: (1) to match the structure of a typical middle school education classroom situation; (2) to utilize instruments employed during the field testing of the earlier print version of the CPS; (3) to obtain suggestions for revision through the collection of formative data; and (4) to obtain summative data. Therefore, some compromises were necessarily made: (1) a maximum class size of fifteen special education students limited the experimental group to ten students and the control group to five students at each site; (2) only ten weeks were allowed for pilot-testing so as not to unduly interfere with the planned curriculum at each school; (3) new instruments were not designed because the project was funded as an adaptation of an earlier product that included instruments; and (4) in order to obtain a wide variety of formative data, no requirement was made to have homogeneity among the test

sites--thus excluding any basis for comparing summative data gathered from different sites.

The compromises listed previously do not detract, however, from the overall conclusion that the summative data from the aggregated groups supports the conclusion that as a result of their interaction with the microcomputer version of CPS, students in the experimental groups gained more knowledge (about careers, about self with respect to careers and career planning, and about career planning in general) than did students in the control groups.

## Analysis of Teachers' Ratings

In order to provide their summary opinions of the CPS, Microcomputer Version, participating teachers assigned numerical ratings to each computerized component of the package, to its Student Guide, and to its Instructor Guide. Teachers based their ratings on a five-point scale, similar to a Likert scale,* which they applied as appropriate to each item under consideration. All the student materials--that is, each of the thirteen computerized CPS components and the print-based Student Guide--were rated according to their perceived appropriateness for the students along the eight dimensions displayed in table 4. Each of the four

*According to this scale, 5 = very good, excellent; 4 = good, more than acceptable; 3 = average, acceptable; 2 = poor, minimally acceptable; and 1 = very poor, unacceptable.

sections of the Instructor Guide--the introduction, technical procedures, instructional procedures, and suggestions for supplementing the package--was rated along the three dimensions displayed in table 5.

An inspection of table 4 reveals that the teachers perceived all the student materials to be generally in the acceptable-more than acceptable range and the computerized materials to meet students' needs more closely than the print-based Student Guide. The level of active student involvement was the most highly rated aspect of the computerized materials, while the level of difficulty received the lowest rating. Clarity and conceptual level were perceived as the strongest aspects of the Student Guide, while motivational appeal was perceived as its weakest aspect and, indeed, as the only aspect close to the minimally acceptable range.

Table 5 indicates that the Instructor Guide fared somewhat better than the student materials, achieving ratings on all three dimensions in the good - very good range. Indeed, the mean ratings presented in this table may be somewhat misleading, since the modal rating for the Instructor Guide--reported in fifty-two of the total sixty-nine ratings across all sections and all dimensions--was "5 - very good, excellent."

TABLE 4

MEAN RATINGS OF STUDENT MATERIALS

| Item Rated | Mean Ratings: Computerized Components | Mean Ratings: Student Guide |
|---|---|---|
| Conceptual level | 3.62 | 3.50 |
| Reading level | 3.62 | 3.33 |
| Maturity level | 3.59 | 3.33 |
| Level of difficulty | 3.47 | 3.17 |
| Motivational appeal | 3.63 | 2.83 |
| Level of active student involvement | 3.66 | 3.33 |
| Clarity | 3.57 | 3.50 |
| Overall quality | 3.56 | 3.00 |

TABLE 5

MEAN RATINGS OF INSTRUCTOR GUIDE

| Item Rated | Mean Rating |
|---|---|
| Clarity | 4.26 |
| Utility | 4.30 |
| Overall quality | 4.30 |

## CONCLUSIONS AND RECOMMENDATIONS

The analyses of the formative and summative data discussed in the two preceding sections have led to a number of conclusions about the field test of the Career Planning System, Microcomputer Version, as well as recommendations for the revision of its component materials. The purpose of this section is to present those conclusions and recommendations that may assist researchers and developers undertaking future projects of a similar nature.

### Conclusions

The main conclusions are as follows:

- Middle-school students from a variety of special populations (mildly mentally retarded, learning disabled, and behaviorally handicapped) found the system interesting, enjoyable, and usable.
- Teachers of such students found the system beneficial for teaching career planning and for encouraging and facilitating career guidance interviews.
- Students in the aggregated experimental group gained more knowledge (about careers, about self with respect to careers and career planning, and about career planning in general) than did students in the aggregated control group. The difference was statistically significant at the .05 level.

- The system is usable for a wider audience than the group with which it was pilot-tested.
- The system's various programs, if made accessible by means of a simple menu device, are valuable even without the management system.

## Recommendations

The main recommendations are as follows:

- The CPS, Microcomputer Version, should be widely disseminated and used among different populations (special education students and others) at a wide range of grade levels.
- An alternative management system for CPS, Microcomputer Version, should eventually be prepared to allow access to any program through a simple menu device, without requiring the user to first pass through the Interest Sort.
- Print-based materials should not be adapted to the microcomputer; the inevitable tendency is to make the microcomputer an electronic page turner.
- The use of a microcomputer with a videodisc player (or similar device) should be investigated to provide better sound and graphics while (possibly) reducing the programming time.
- When possible, systems should not require the simultaneous use of the joystick and the keyboard.

- When possible, hard copy, such as the results of the Interest Sort, should be prepared by a printer attached to the microcomputer, rather than by students or teachers who make hand-written entries in an accompanying manual.
- The research design for evaluating such projects should involve larger pilot-test groups and a greater number of questions for each category of information investigated.
- The length of the pilot-test period for such projects should be one school year, rather than one quarter, in order to enable more students to complete the entire system.

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# APPENDIX

# EVALUATION INSTRUMENTATION

CPS Student Feedback Form

NAME _____

SCHOOL _____

TEACHER _____

Directions:

Read the question. Choose the answer that says how you feel. Check (✓) the space next to that answer.

1. How much do you know about the work done in different jobs?

_____(a) Nothing at all.
_____(b) Very little.
_____(c) I can't say.
_____(d) Some.
_____(e) A lot.

2. How much do you know about how your personal interests and abilities are related to the work that is done in different jobs?

_____(a) Nothing at all.
_____(b) Very little.
_____(c) I can't say.
_____(d) Some.
_____(e) A lot.

3. How much do you know about which jobs you might like and which jobs you might not like as well?

_____(a) Nothing at all.
_____(b) Very little.
_____(c) I can't say.
_____(d) Some.
_____(e) A lot.

4. How much have you thought about your future?

_____(a) Not at all.
_____(b) Very little.
_____(c) I can't say.
_____(d) Some.
_____(e) A lot.

5. How much have you thought about which studies and activities you should choose?

_____(a) Not at all.
_____(b) Very little.
_____(c) I can't say.
_____(d) Some.
_____(e) A lot.

6. You have to know what you're good at and what you're poor at before you can make good decisions about your career.

_____(a) Agree.
_____(b) Disagree.
_____(c) I can't say.

7. I know all that I need to about the job(s) that I'm interested in.

_____(a) Agree.
_____(b) Disagree.
_____(c) I can't say.

8. Your career is decided by chance.

_____(a) Agree.
_____(b) Disagree.
_____(c) I can't say.

9. You should think about what you are good at and what you like when making career decisions.

_____(a) Agree.
_____(b) Disagree.
_____(c) I can't say.

10. I won't worry about planning and preparing for my career; I know something will come along sooner or later.

_____(a) Agree.
_____(b) Disagree.
_____(c) I can't say.

11. So far I haven't been able to find an occupation that I would really like to get into.

_____(a) Agree.
_____(b) Disagree.
_____(c) I can't say.

12. I know very little about job requirements.

_____(a) Agree.
_____(b) Disagree.
_____(c) I can't say.

13. In planning for your career you need to know what kind of person you are.

_____(a) Agree.
_____(b) Disagree.
_____(c) I can't say.

## Instructor Log

Please use the scale at the right to evaluate each component of the Career Planning System, microcomputer version, listed below. Be sure to add your comments (strengths, weaknesses, suggestions for improvement) in the spaces provided.

5 = very good, excellent
4 = good, more than acceptable
3 = average, acceptable
2 = poor, minimally acceptable
1 = very poor, unacceptable

| | Rating | Comments |
|---|---|---|
| INTRODUCTION | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |
| INTEREST SORT | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |

| | Rating | Comments |
|---|---|---|
| INTEREST AREAS | | |
| 1. Advising | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |
| 2. Arranging | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |

| | Rating | Comments |
|---|---|---|
| INTEREST AREAS (cont'd.) | | |
| 3. Building and Making | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |
| 4. Doing Clerical Work | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |

| | Rating | Comments |
|---|---|---|
| INTEREST AREAS (cont'd.) | | |
| 5. Helping | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |
| 6. Maintaining and Repairing | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |

| | Rating | Comments |
|---|---|---|
| INTEREST AREAS (cont'd.) | | |
| 7. Thinking in Pictures | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |
| 8. Using Environmental Information | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |

| | Rating | Comments |
|---|---|---|
| INTEREST AREAS (cont'd.) | | |
| 9. Working with Equipment | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |
| 10. Working with Numbers and Symbols | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |

| | Rating | Comments |
|---|---|---|
| EDUCATION PLAN | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |
| STUDENT GUIDE | | |
| Conceptual level | _____ | |
| Reading level | _____ | |
| Maturity level | _____ | |
| Level of difficulty | _____ | |
| Motivational appeal | _____ | |
| Level of active student involvement | _____ | |
| Clarity | _____ | |
| Overall quality | _____ | |
| INSTRUCTOR GUIDE | | |
| Introducing the CPS | | |
| Clarity | _____ | |
| Utility | _____ | |
| Overall quality | _____ | |

| | Rating | Comments |
|---|---|---|
| INSTRUCTOR GUIDE (cont'd.) | | |
| Using the CPS | | |
| A. Technical procedures | | |
| Clarity | _____ | |
| Utility | _____ | |
| Overall quality | _____ | |
| B. Instructional procedures | | |
| Clarity | _____ | |
| Utility | _____ | |
| Overall quality | _____ | |
| Supplementing the CPS | | |
| Clarity | _____ | |
| Utility | _____ | |
| Overall quality | _____ | |

ADDITIONAL COMMENTS: